

Test of cups and pistons for the Hydrautrans Drive Train

Publieke samenvatting / Public summary

Background

Drive trains are heavy components of wind turbines with high maintenance requirements. More reliable or lighter solutions can be direct drive generators, medium speed generators in combination with gearboxes with a lower gear ratio or the application of a lighter, more reliable gearbox. The Hydrautrans Drive Train potentially provides such a lighter and more reliable gearbox. In an earlier project the required pump and motor and the complete drive train: the Hydrautrans Drive Train (HDT) have been designed and conceptually engineered.

Objective

In an earlier project (HDT 2018; Hernieuwbare Energie TEHE115078) the required pump and motor and the complete drive train: the Hydrautrans Drive Train (HDT) have been designed and conceptually engineered. The design uses a revolutionary hydraulic pump (and identical) motor, based on the patented Floating Cup Technology (FCT) of Innas, with a very high efficiency. In this project we will establish the resistance between cup and piston of the FCT pump to be used in the HDT. If it is as low as expected based on results from earlier (smaller) designs, this requires an extremely accurate measurement.

Short description of activities

In this project we will build a test bench and 6 sets of cups and pistons (WP2; VDL). A test setup: container allowing with high hydraulic pressure (350bar; safe), actuator, highly accurate sensors;

Projectinformatie / Project information

Projectnummer / Project number
TEHE118006

Subsidiebedrag / Grant amount
€ 202.221,00

Algemene informatie / General information

Penvoerder / Secretariat
Hydrautrans B.V.

Publicaties en materialen / Publications and attachments

- 07.07.2021

Eindrapport TEHE118006

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will be built (WP3; Innas). The resistance between cups and pistons will be measured and reported (WP4; Innas); the cups and pistons will be analysed to see which material and manufacturing method is best fit for purpose, optionally a metallurgic analysis will be performed to investigate the cups and pistons in detail. In WP1 (Hydrautrans) the project coordination, management and reporting is carried out.

Results

The project will result in confirmation of the manufacturability of the main components and the expected low resistance between cup and piston. (This has already been demonstrated for smaller pumps of the same principle). If this is realised, in principle the high efficiency of the high speed (3rd) step of the HDT is demonstrated.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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